

REMARKS

Applicant has amended claim 1 to further clarify non-obvious patentable features of the claimed refrigerating machine oil. The claim language of amended claim is supported by as-filed specification, e.g., at ¶¶ [0017], [0018], and [0020]. No new matter has been introduced.

The Applicant respectfully traverses the 35 U.S.C. § 103(a) rejection of claims 1-3 over U.S. Patent No. 6,231,782 to Shimomura et al. ("Shimomura") and the 35 U.S.C. § 103(a) rejection of claim 1 over U.S. Patent No. 6,736,991 to Cohen et al. ("Cohen").

Amended claim 1 recites a refrigerating machine oil. Among other things, a nitrogen content in a mineral oil is no more than 20 ppm by mass; a percentage of aromatic ring structures (%CA) in the mineral oil is from 8 to 15; and a sulfur content in the mineral oil is no more than 75 ppm by mass.

The Examiner cited Shimomura as purportedly teaching the mineral oil recited in claim 1, relying on Base Oil 4, as disclosed at col. 15, lines 25-28 of Shimomura.

Contrary to the Examiner's position, however, as evidenced by the attached Declaration of Yuji SHIMOMURA under 37 C.F.R. § 1.132 ("Rule 132 Declaration"), distinct, unobvious differences exist between the refrigerant machine oil recited in amended claim 1, and the properties of Base Oil 4 disclosed in Shimomura.

For example, Base Oil 4 of Shimomura lacks the sulfur content recited, e.g., in amended claim 1. The sulfur content of Base Oil 4 is 280 ppm, rather than the claimed sulfur content range of no more than 75 ppm. Moreover, Base Oil 4 exhibits inferior properties, such as low stability at 200 °C and inferior anti-wear property, compared to the claimed refrigerating machine oil. See Rule 132 Declaration, page 3.

In addition, as discussed in the Rule 132 Declaration, one of ordinary skill in the art would recognize that reducing the disclosed sulfur content of Base Oil 4 to the claimed sulfur content would cause a decrease in its percentage of aromatic ring structures(%CA), below the range of %CA recited in the claims (i.e., 8 to 15 %). The Rule 132 Declaration developed a new Comparative Example designated Base Oil 7, with a % CA of zero, which is below the claimed range of 8 to 15 %. Comparing Base Oil 7 to the claimed refrigerating machine oil yielded an unforeseen beneficial result, i.e., the refrigerating machine oil having the features recited in claim 1 has an unexpectedly significantly superior miscibility. The miscibility of Base Oil 7 with R22 refrigerant is > 30 °C, whereas the miscibility of Examples 1 and 2 is disclosed in the present application as 3 °C and 6 °C, respectively.

In summary, the Rule 132 Declaration establishes that Base Oil 4 neither discloses nor suggests the claimed sulfur content, and that if Base Oil 4 were altered to reduce its sulfur content to the claimed sulfur range, its %CA would fall below the claimed range of %CA, resulting in unexpected beneficial results for the claimed refrigerating machine oil.

With respect to the rejection of claim 1 over Cohen, Cohen discloses in col. 2, line 66-col. 3, line 16, sulfur content of 0.05% (500 ppm) or lower. Viewed in its entirety, however, this portion of Cohen is discussing the naphthenic mineral oil refrigeration lubricants listed in Table 1, which have respective sulfur contents of 200 ppm and 300 ppm. In both examples, the sulfur contents are below 500 ppm, but are much higher than the upper end point of the claimed range, i.e., 75 ppm, and thus do not overlap with the claimed range of no more than 75 ppm. Moreover, the range of 200 ppm-300

ppm is not sufficiently close to "no more than 75 ppm," that one skilled in the art would have expected Cohen's lubricants to have the same properties as lubricants having a sulfur content of no more than 75 ppm. See M.P.E.P. § 2144.05. This claim language is distinguishable from the claim language in *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.). Because 75 ppm is not close to 200 ppm to 300 ppm, one of ordinary skill in the art, having considered Cohen, would not have selected a range of no more than 75 ppm as one of a finite number of solutions for a sulfur content in a refrigerating machine oil composition with predictable results corresponding to the results disclosed in the present application, obtained by the refrigerating machine oil recited in the present claims.

In view of the above remarks, amended claim 1 is not obvious over either Shimomura or Cohen. Claim 3 depends from claim 1, and incorporates all of the elements of amended claim 1. Claim 3 is not obvious over Shimomura at least due to its dependence from amended claim 1.

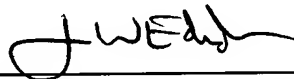
In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this application, withdrawal of the rejections, and timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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